



## One-year delayed effect of fog on malaria transmission: A time-series analysis in the rain forest area of Mengla County, south-west China

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### Abstract:

**BACKGROUND:** Malaria is a major public health burden in the tropics with the potential to significantly increase in response to climate change. Analyses of data from the recent past can elucidate how short-term variations in weather factors affect malaria transmission. This study explored the impact of climate variability on the transmission of malaria in the tropical rain forest area of Mengla County, south-west China. **METHODS:** Ecological time-series analysis was performed on data collected between 1971 and 1999. Auto-regressive integrated moving average (ARIMA) models were used to evaluate the relationship between weather factors and malaria incidence. **RESULTS:** At the time scale of months, the predictors for malaria incidence included: minimum temperature, maximum temperature, and fog day frequency. The effect of minimum temperature on malaria incidence was greater in the cool months than in the hot months. The fog day frequency in October had a positive effect on malaria incidence in May of the following year. At the time scale of years, the annual fog day frequency was the only weather predictor of the annual incidence of malaria. **CONCLUSION:** Fog day frequency was for the first time found to be a predictor of malaria incidence in a rain forest area. The one-year delayed effect of fog on malaria transmission may involve providing water input and maintaining aquatic breeding sites for mosquitoes in vulnerable times when there is little rainfall in the 6-month dry seasons. These findings should be considered in the prediction of future patterns of malaria for similar tropical rain forest areas worldwide.

**Source:** <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2441628>

### Resource Description

#### Early Warning System:

resource focus on systems used to warn populations of high temperatures, extreme weather, or other elements of climate change to prevent harm to health

A focus of content

#### Exposure :

weather or climate related pathway by which climate change affects health

Ecosystem Changes, Meteorological Factors, Precipitation, Temperature, Other Exposure

**Temperature:** Fluctuations

**Other Exposure:** fog day frequency

# Climate Change and Human Health Literature Portal

## **Geographic Feature:**

resource focuses on specific type of geography

Rural, Tropical

## **Geographic Location:**

resource focuses on specific location

Non-United States

**Non-United States:** Asia

**Asian Region/Country:** China

## **Health Impact:**

specification of health effect or disease related to climate change exposure

Infectious Disease

**Infectious Disease:** Vectorborne Disease

**Vectorborne Disease:** Mosquito-borne Disease

**Mosquito-borne Disease:** Malaria

## **Mitigation/Adaptation:**

mitigation or adaptation strategy is a focus of resource

Adaptation

## **Model/Methodology:**

type of model used or methodology development is a focus of resource

Outcome Change Prediction

## **Resource Type:**

format or standard characteristic of resource

Research Article

## **Timescale:**

time period studied

Short-Term (

## **Vulnerability/Impact Assessment:**

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

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